

THAT WHICH IS CLAIMED IS:

1. An isolated nucleic acid encoding β -glucuronidase (GUS), said isolated nucleotide selected from the group consisting of:
 - (a) DNA having the nucleotide sequence given herein as **SEQ ID NO:1**;
 - 5 (b) polynucleotides that hybridize to DNA of (a) above under stringent conditions represented by a wash stringency of 50% Formamide with 5x Denhardt's solution, 0.5% SDS and 1x SSPE at 42°C, and which encode a β -glucuronidase (GUS) protein; and
 - 10 (c) polynucleotides that differ from the DNA of (a) or (b) above due to the degeneracy of the genetic code, and which encode the protein encoded by a DNA of (a) or (b) above.
- 15 2. An isolated nucleic acid according to claim 1 encoding a GUS protein having a peak activity at a pH of from 3 to 5.
3. An isolated nucleic acid according to claim 1 which encodes the protein having the amino acid sequence given herein as **SEQ ID NO:2**.
4. A recombinant nucleic acid comprising a promoter operably linked to an
20 isolated nucleic acid encoding a GUS according to claim 1.
5. A vector comprising an isolated nucleic acid according to claim 1.
6. A vector according to claim 5, wherein said vector is a plasmid.
- 25 7. A vector according to claim 5, wherein said vector is an *Agrobacterium* vector.
8. A host cell containing heterologous nucleic acid according to claim 1 and
30 expressing the encoded GUS protein.
9. A host cell according to claim 8, wherein said host cell is a plant cell.

10. A host cell according to claim 8, wherein said host cell is an animal cell.

11. A host cell according to claim 8, wherein said host cell is a yeast cell.

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12. A host cell according to claim 8, wherein said host cell is a bacterial cell.

13. A host cell according to claim 8, wherein said host cell is a lactic acid
bacteria cell.

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14. A method of making a recombinant cell, comprising transforming a host
cell with a vector according to claim 7.

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15. A method according to claim 14, further comprising the step of expressing
the encoded GUS protein in said host cell.

16. A method according to claim 14, further comprising the step of detecting
said encoded GUS protein in said host cell.

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17. A method according to claim 14, further comprising the step of collecting
said encoded GUS protein from said host cell.

18. An isolated β -glucuronidase (GUS) protein encoded by a nucleic acid
selected from the group consisting of:

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(a) DNA having the nucleotide sequence given herein as **SEQ ID NO:1**;

(b) polynucleotides that hybridize to DNA of (a) above under stringent
conditions represented by a wash stringency of 50% Formamide with 5x Denhardt's
solution, 0.5% SDS and 1x SSPE at 42°C, and which encode a β -glucuronidase
(GUS) protein; and

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(c) polynucleotides that differ from the DNA of (a) or (b) above due to the
degeneracy of the genetic code, and which encode the protein encoded by a DNA of
(a) or (b) above.

19. An isolated GUS protein according to claim 18 having the amino acid sequence given herein as **SEQ ID NO: 2**.

5 20. An antibody that specifically binds to an isolated GUS protein according to claim 18.